



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,777	09/22/2000	Mitsuaki Komino	08038.0044	1267

22852 7590 04/16/2007
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
----------	--------------

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/667,777

Applicant(s)

KOMINO ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36,38-40 and 42-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36,38-40 and 42-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 36, 38-40, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagusa et al (JP09-165681)¹ in view of Niori; Yusuke et al. (US 5800618 A). Sagusa teaches an electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) comprising:
 - i. base metal (“aluminum rolled stock 13” [0011]) made of a cast metal – Applicant’s specification (page 12, line 37 – page 13, line 2) teaches aluminum as the “cast metal” – claim 36
 - ii. a heater (“sheath heater 11”; [0011] computer translation) embedded in the base metal (“aluminum rolled stock 13” [0011]) and arranged on a plane – claim 36

Sagusa does not teach:

- i. a pair of core metal plates embedded in the base metal (“aluminum rolled stock 13” [0011]) and arranged substantially parallel to the plane and adjacent to the heater (“sheath heater 11”; [0011] computer translation), the core metal plates being arranged above and below the heater, respectively; wherein the heater (“sheath heater 11”; [0011] computer translation) and the core metal plates are cast² in the base metal (“aluminum rolled stock 13” [0011]) such that the core metal plates are entirely surrounded by the base metal (“aluminum rolled stock 13” [0011]) and are entirely in metal-to-metal contact with the

¹ Refer to Japanese Patent Office machine translation of November 6, 2002.

base metal (“aluminum rolled stock 13” [0011]), wherein a material forming the core metal plates has a rigidity (stainless steel, as per Applicant’s specification vs. Aluminum for the base metal – page 12, lines 30-37) higher than that of a material forming the base metal (“aluminum rolled stock 13” [0011]) – claim 36

- ii. each of the core metal plates has a plurality of through holes, which are filled with the base metal (“aluminum rolled stock 13” [0011]) so that the base metal (“aluminum rolled stock 13” [0011]) above the respective core metal plates and the base metal (“aluminum rolled stock 13” [0011]) below the respective core metal plates are bound together via the base metal (“aluminum rolled stock 13” [0011]) filled in the through holes – claim 36
- iii. The electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) according to claim 36, wherein each of the through holes has a diameter ranging from about 0.1 mm to about 10 mm – claim 38
- iv. The electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) according to claim 36, wherein the core metal plates are made of stainless steel – claim 39
- v. The electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) according to claim 36, wherein the core metal plates have a thickness ranging from about 1 mm to about 2 mm, as claimed by claim 40
- vi. The electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) according to claim 36, wherein the core metal plates is disk-shaped, as claimed by claim 42

² Cast vb 3 a : to dispose or arrange into parts or into a suitable form or order. Merriam-Webster’s Collegiate

Art Unit: 1763

- vii. The electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) according to claim 36, wherein the material forming the core metal plates has a softening temperature higher than that of the material forming the base metal (“aluminum rolled stock 13” [0011]), as claimed by claim 43
- viii. A plasma processing apparatus comprising: a processing vessel; the electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation) as defined in claim 1; and a high frequency power source adapted to apply a high frequency voltage to the electrode (Figure 1A,B; Figure 3,4 - [Means for solving the problem], Translation), as claimed by claim 44

Niori teaches

- i. a single core metal plate (47; Figure 7; column 16, lines 19-32), and wherein a material (“stainless steel” column 1, lines 15-25) forming the core metal plate (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) has a rigidity (stainless steel, as per Applicant’s specification vs. Aluminum for the base metal) higher than that of a material forming Sagusa’s base metal (“aluminum rolled stock 13” [0011]) – claim 36
- ii. The electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) according to claim 36, wherein the core metal plate (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) is made of stainless steel – claim 39
- iii. The electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) according to claim 36, wherein the core metal plate (47; Figure 7; column 16,

Art Unit: 1763

lines 19-32; column 1, lines 15-25 - “stainless steel”) are disk-shaped (Figure 7-9), as claimed by claim 42

- iv. The electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) according to claim 36, wherein the material forming the core metal plate (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) have a softening temperature higher than that of the material forming the base metal (“aluminum rolled stock 13” [0011]), as claimed by claim 43 - stainless steel, as per Applicant’s specification vs. Aluminum for the base metal – page 12, lines 30-37
- v. A plasma processing apparatus (Figure 7) comprising: a processing vessel (1; Figure 7); the electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) as defined in claim 1; and a high frequency power source (44; Figure 7) adapted to apply a high frequency voltage to the electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”), as claimed by claim 44

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Niori’s electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) to Sagusa’s apparatus, in multiplicity, under optimized dimensions, for use in Niori’s plasma processing apparatus (Figure 7).

Motivation to add Niori’s electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) to Sagusa’s apparatus, in multiplicity, under optimized dimensions, for use in Niori’s plasma processing apparatus (Figure 7) is for using a heated ceramic electrode that is durable as taught by Sagusa ([0012]) and Niori (column 1; lines 15-25, column 2; lines 19-33) and to prevent damages during plasma processing as taught by Niori (column 2; lines 19-33).

Art Unit: 1763

Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04). Further, it is well established that the duplication of parts is obvious (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Response to Arguments

3. Applicant's arguments filed January 19, 2007 have been fully considered but they are not persuasive.

4. Applicant states:

“

Sagusa does not, however, teach a pair of core metal plates embedded in the base metal formed from a cast metal, as claimed. See, e.g., claim 36.

“

5. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In particular, the Examiner states above, “a pair of core metal plates embedded in the base metal (“aluminum rolled stock 13” [0011]) ...” and further along in the Examiner’s rejection “It would have ... to add Niori’s

Art Unit: 1763

electrode (47; Figure 7; column 16, lines 19-32; column 1, lines 15-25 - “stainless steel”) to Sagusa’s apparatus, *in multiplicity*, ...”.

6. Applicant states:

“

Although Sagusa mentions heaters employing cast aluminum, the reference does so in a discussion of the prior art. See Sagusa, paragraph [0005].

“

In response, nowhere in the Examiner’s rejection does the Examiner rely on Sagusa teaching or not teaching “cast aluminum”. In fact, the Examiner repeatedly illustrates Sagusa’s base metal (“aluminum rolled stock 13” [0011]) made of a cast metal – Applicant’s specification (page 12, line 37 – page 13, line 2) teaches aluminum as the “cast metal”. Further, Applicant’s use of cast³ in Applicant’s specification is as a verb which lends to arguments based on product-by-process limitations. See above discussion and the Examiner’s interview summary of January 12, 2007.

7. Applicant states:

“

Further, Sagusa discloses that prior art heaters employing cast aluminum exhibit various problems, such as susceptibility to oxidation, out-gassing, surface roughness, moisture absorption, and breakage. *Id.* at [0006]. To overcome these problems, Sagusa utilizes a rolled aluminum stock to cover the disclosed heater plate. *Id.* at [0007]-[0008]. Thus, if anything Sagusa teaches away from the use of cast metals. See, e.g., *In re Gurley*, 27

“

Art Unit: 1763

In response, the Examiner notes that even when a reference teaches an unfavorable alternative/embodiment which is Applicant's invention, the reference may still be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. See MPEP 2123.

8. Applicant states:

“

Sagusa also fails to teach embedding a pair of core metal plates in a base metal form of a cast metal, such that the core metal plates are entirely surrounded by the base metal, arranged above and below a heater, respectively, and substantially parallel to the plane and adjacent the heater, as claimed. See claim 36. Indeed, Sagusa is completely silent with respect to embedding a metal plate within a cast base metal, much less embedding two of such plates in the location and orientation specified by the claims.

“

9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). As stated above, Niori and the Examiner's proposed combination produces Applicant's invention with motivation derived from the references themselves.

10. Applicant states:

“

³ Cast *vb* 3 a : to dispose or arrange into parts or into a suitable form or order. Merriam-Webster's Collegiate

Art Unit: 1763

Applicants acknowledge the Examiner's assertion that element 47 of Niori is a stainless steel electrode/core metal plate. Office Action, page 2. Applicants respectfully submit, however, that the Examiner's assertion in this regard is mistaken. Element 47 of Niori is a metal mesh electrode formed from molybdenum or possibly tungsten, not stainless steel. See Niori, column 17, lines 10-22 and column 18, lines 60-67. Indeed, Niori only mentions the use of stainless steel as a covering plate for a prior art heater element, not as an electrode, and certainly not as an embedded electrode as asserted by the Examiner.

“

In response, the Examiner disagrees. When taking the Niori reference as a whole, Niori teaches preferred materials such as *stainless steel* or Inconel that protect underlying metals from corrosion (column 1; lines 15-25).

11. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner has demonstrated that motivation is found directly in the references themselves, in particular, motivation for the combination was proposed as being for using a heated ceramic electrode that is durable as taught by Sagusa ([0012]) and Niori

Art Unit: 1763

(column 1; lines 15-25, column 2; lines 19-33) and to prevent damages during plasma processing as taught by Niori (column 2; lines 19-33).

12. Applicant states:

“

Thus, Sagusa's sheath heaters would not be exposed to corrosive gases during plasma processing, and thus would not be expected to exhibit the problems of the prior art discussed by Niori.

“

In response, Applicant's statements presume a sufficiently deep layer of embedding depth where no corrosive gas would penetrate, however, the added protection as suggested by Niori would further add protection to the desired materials from the corrosive gases as taught by both Niori and Sagusa (see above).

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1763

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Rudy Zervigon
4/12/7